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IN THE

Supreme Court of the United States

October Term, 1974

No. 74-1016

LEONARD R. KAHN,

Petitioner,

vs.

DYNAMICS CORPORATION OF AMERICA,

Respondent.

PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE SECOND CIRCUIT

LEONARD R. KAHN
70 North Grove Street
Freeport, New York 11520
Petitioner, Acting Pro se

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To the Honorable Chief Justice and Associate Justices of the Supreme Court of the United States:

Your Petitioner, Leonard R. Kahn (Plaintiff and Appellant below), acting *pro se*, respectfully prays that a Writ of Certiorari issue to review the judgment dated December 10, 1974 of the U.S. Court of Appeals for the Second Circuit in the above action [1], rehearing denied January 9, 1975, except with modification of opinion, affirming the decision of the U.S. District Court for the Southern District of New York.

Reference to the printed Appendix will be designated by (JA).

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1. The Trial Court Judge was the Honorable Charles H. Tenney of the Southern District of New York.
The Opinion of the Court of Appeals was written by the Honorable Harold R. Tyler, District Judge sitting by designation also from the Southern District of New York.

OPINIONS BELOW

The opinion of the Court of Appeals and the denial of a petition, except with modification of opinion not yet reported, and the opinion rendered by the District Court (367 F. Supp. 63) appear in the Appendix hereto.

JURISDICTION

The jurisdiction of this Court is invoked under 28 U.S.C. Sec. 1254(1). The jurisdiction of the U.S. District Court was based on 28 U.S.C. 1338. A timely motion for a stay was filed on January 16, 1975 and granted on January 30, 1975.

QUESTIONS PRESENTED

1. If there has been no factual inquiry and specific finding of the level "of ordinary skill in the pertinent art" as laid down by the Supreme Court in *Graham* v. *Deere*, 383 US 1, may the patentee be used as the standard of "ordinary skill" in determining obviousness particularly when the patentee has been determined to have "outstanding and extraordinary" qualifications by his professional peers?

(Argued post p. 7)

2. Under 35 U.S.C 285, what measure of proof is required to establish bad faith to support the award of attorney fees and is such an award a violation of due process, especially if the bad faith findings are based on:

a) a document not in evidence,
b) a violation of a formal stipulation, and
c) a manifest error in fact?

(Argued post p. 15)

3. Is the requirement for due process met when the Trial Court finds facts conflicting with a formal stipulation, still in effect, and bases findings of non-infringement and bad faith on said facts?

(Argued post pp. 12, 15)

4. Does the late claiming doctrine as laid down by the Supreme Court in *Muncie Gear* v. *Outboard Marine*, 315 US 759, apply to claims "which indeed may be more specific and limited than those originally presented" and is it "immaterial to the defense of late claiming whether or not the claims in suit were supported by the application as originally filed"?

(Argued post p. 11)

5. Is the effect of the doctrine of the presumption of validity in 35 U.S.C. 282 destroyed if a Court finds that:

> "Unfortunately for Kahn there is no evidence that the patent examiner knew of the Ohl patent or that it was called to his attention by Kahn. Therefore, the presumption of validity accorded a patent granted in light of prior art is inapplicable."

when the Court ignores uncontested evidence that the patent examiner cited to Kahn the Ohl patent, its number, issuance date, and technical description?

(Argued post pp. 9, 15)

CONSTITUTIONAL AND STATUTORY PROVISIONS INVOLVED

Since the provisions involved are lengthy, the following is a list of citations and the verbatim text is provided in the Appendix:

1. U.S. Constitution Article 1 Section 8, Para. 8.
2. U.S. Constitution, Fifth Amendment
3. 35 U.S.C. Sections 102, 103, 120, 154, 282, 285.

STATEMENT

A patent controversy arose between Your Petitioner, Kahn [2], and Dynamics Corporation of America (DCA), Defendant below, both of New York, and Kahn filed a suit in the U.S. District Court for the Southern District of New York.

The District Court ruled the patent was invalid, was not infringed, and granted attorney fees. The Court of Appeals affirmed and denied petition for rehearing, but modified the opinion. Kahn timely requested a stay to file a Petition for a Writ of Certiorari on January 16, 1975.

The patent in question, 3,030,503 (the '503 patent) discloses a means for reducing the deleterious effects of fading of radio signals. This was one of the first problems noted by early experimenters in long distance radio communications.

When a signal fades, it is relatively simple to increase the "gain" of the radio receivers so as to maintain the proper signal level or loudness. Unfortunately, noise (hiss and static) accompanies all signals, no matter whether the signals be electrical, acoustical, biological, etc. Therefore, during fades the relative strength between the signal and the noise (the signal-to-noise ratio) is degraded and the voice or music signal has more hiss and static, and teletypes print errors. The problem of poor signal-to-noise ratio is one of the most basic problems in science.

In 1927, a system called "Diversity Reception" was introduced to alleviate the fading problem. In its simplest form, diversity systems uses a multiplicity of radio antennas which fade "diversely". That is, the fading at one antenna location is not in time synchronism with the fading at the second location, and a better overall signal can be achieved by intelligent use of the two signals. After some 27 years of intensive experimentation, and after considering many inventions (*including most of the well known*

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2. This Petition is being filed *pro se*. Your Petitioner is not an attorney, but recently was registered to practice before the Patent Office in patent cases as a Patent Agent and has intimate knowledge of the facts of this case.
In the following, in order to avoid confusion, Your Petitioner will refer to himself as "Kahn", although it is foreign to his normal manner of expression.

prior art considered in this case), the industry determined that the best form of diversity was one in which the strongest signal, at any given moment, is selected and the other weaker signals and their noise are switched off. Such "switching systems" were almost exclusively used by the major communications companies by the early 1950's.

This was the state of the art when Kahn, then a young engineer working for a small research organization, Crosby Laboratories, participated in a project for the Army in competition with M.I.T. and Stanford University. It was his invention (in complete disregard of conventional practice) to combine the signals of the various receivers in such a manner as to provide the least noisy signal; i.e., the best signal-to-noise ratio. The conventional switching system discarded the weaker signals but Kahn taught how to use them in an optimum manner.

Simply stated, Kahn's invention provided *optimum signal-to-noise ratio* by placing the signals from the various diversity receivers in phase, so that the signals add and reinforce each other, and *combining or blending the signals in accordance with their signal strength ratios squared.* (Thus, the name, "Ratio Squaring". Kahn's system is also called "Optimum Ratio" and "Maximal Ratio" by various authors.) This change in the amount of combining (blending) was achieved by changing the relative gain of the branch receivers connected to the diversity antennas, as a function of the fading situation. Kahn also disclosed in patent '503 that this changing of relative gains for the signals from the different antennas must be done *slowly* so that the signals control the blending, rather than the signal *plus* the more erratic noise sharing in the control. If the gains of the branch receivers were allowed to change *rapidly*, noise and other problems would result [3].

The "Ratio Squaring" system was initially described in the engineering literature in 1954 by Kahn and became the standard in the industry shortly thereafter. It is now

3. The importance of performing this procedure slowly is discussed in the description of the RCA system below.

extensively used by the U.S. Government (which holds a royalty free license [4]), by major communications companies, and by NASA (deep space navigation systems). Researchers from AT&T, RCA, the U.S. Government, and various Universities *have given Kahn credit* for "Ratio Squaring". He has also *licensed* RCA, Northrop, and Western Union.

The importance of the invention is established by the impressive number and quality of papers and books describing this invention and attributing it to Kahn (App. B, 12-22).

An M.I.T. book "Lectures on Communication System Theory", in a detailed analysis of ratio squaring, stated,

> "The advantage of utilizing all of the available signals in order to achieve a better performance than is obtainable from any of the individual channels was pointed out by L.R. Kahn." (Exh. D-P)

Taylor of NASA on Satellite Tracking, wrote:

> "Kahn ... has shown ... that the diversity combiner output SNR is optimum ..." (Exh. P15)

Prof. Bronzi of the University of Rome, in a paper entitled: "Laboratory Experiments of *Kahn Theory of Diversity* Receivers" described tests of Kahn's Ratio Squaring system (Exh. D-FF pp. 193-4, 199). (Emphasis added)

And Dr. Barrow, of the Air Defense Technical Center, The Hague, stated in a paper in the Proceedings of the Institute of Radio Engineers analyzing and establishing the claim of deHaas as the inventor of diversity that:

> "... deHaas can hardly be criticized, however, for failing to take into account in 1927 of some of the properties of random waves. It was not until 1954 that Kahn discussed in this context the possible improvement obtainable by combination". (Exh. P5)

4. The Defense Department states in their general specifications for communications equipment; "Diversity Combiner. A *ratio-squared* diversity combiner shall be provided when the VFCT is used on HF radio channels. The diversity mode shall provide 2 to 3 db improvement over the non-diversity mode in the presence of band-limited Gaussian noise" (Emphasis added) Exh. P33.

Finally, and importantly to the instant case, the Defendant, DCA, while performing a Government contract for Radar Communications Networks met with severe problems in their use of the then conventional "switching" diversity systems (JA 213-215, Exh. P7). DCA was then advised by M.I.T. to follow Kahn's teachings to solve their problem (JA 886, 888-889, 953-954).

DCA then abandoned their "switching" system and went to the equipment disputed here.

REASONS FOR GRANTING A WRIT

Obviousness

(Questions Presented #1 (supra p. 2))

The Patent Act states that, in order to negate patentability, "... the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art ..." (35 USC 103). The Second Circuit Court of Appeals has, in the past, specifically excluded the patentee from the persons referred to in 35 USC 103 stating that:

> "* * * The issue, however, is not what the patentee expected to produce, but what a hypothetical person 'having ordinary skill in the art' would expect to develop if he had thought about the problem."

Shaw v. *E.B. & A.C. Whiting* (1969) 417 F. 2d 1097; 586 (cert. den. (1970) 397 U.S. 1076; rehearing den. 398 U.S. 954).

Nevertheless, the Courts below used Kahn, the patentee, as the standard of obviousness.

Furthermore, Kahn having been awarded more than 30 U.S. Patents, has authored some 20 engineering papers, has acted as technical consultant to a number of major

commercial firms and the U.S. Government, has taught, as an Adjunct Professor of Electrical Engineering, a number of Graduate school courses in this art, has served as Technical Advisor on the United States Delegation to an Agency of the United Nations, and is a Fellow of the Institute of Electrical and Electronic Engineers (a grade of membership awarded only to persons of outstanding and *extraordinary* qualifications), is not one of *ordinary* skill (JA 178-179). Thus, the Appeal Court's statement in determining obviousness:

> "* * * 'the subject matter as a whole would have been obvious at the time the invention was made to a person' such as an electrical engineer like Kahn.* * *" (Opp. 5943)

erred in using Kahn as the "standard" of reference as the man of "ordinary skill in the art".

The Trial Court, *in direct conflict with this Court's ruling in Graham* v. *John Deere, did not make a factual inquiry or finding into* "the level of ordinary skill in the pertinent art". By failing to follow this Court's mandate it reached a decision which is not in conformance with 35 U.S.C. 103 *the trial courts "standard" was Kahn.*

Finally, we reach the basic question, was Kahn's invention obvious to one of ordinary skill in the art. If it indeed were obvious, why did the communications industry have to wait 27 years for Kahn to solve this pressing problem, why did RCA, Western Union and other major firms license Kahn's invention (JA 425-426, 435) and why did leading researchers from Bell Laboratories, M.I.T., RCA, the U.S. Government, and other prestigious domestic and foreign laboratories publicly credit Kahn with the invention (App. B, 12-22)?

Kahn testified to at least six technical reasons why prior attempts, including those at RCA and Bell Laboratories, failed to find the solution to this basic problem (JA

1285-1286). The technical reasons are difficult to understand. Otherwise, these eminent scientists would have solved the problem themselves.

The invention of the '503 patent was not obvious to the best research minds of the period, let alone obvious to men of "ordinary skill".

Anticipation

(Questions Presented #5 (supra p. 3))

In affirming the finding that Kahn's patent was anticipated, the Appeal Court made a significant error of facts. In their opinion they accepted the Trial Court's finding and stated that:

> "* * * Unfortunately for Kahn, there is no evidence that the patent examiner knew of the Ohl Patent or that it was called to his attention by Kahn. Therefore, the presumption of validity accorded a patent granted in light of prior art is inapplicable.* * *" (Op. 5942-5943 App.)

But there is indisputable evidence that the Examiner was aware of the Ohl patent. Oswald patent No. 2,219,749 (Exh. D-Z), the principal reference before the Patent Office and the Trial Court, includes the statement:

> "If it should be desired to effect a greater degree of frequency stability, this may be done in the manner disclosed in *Patent 2,041,855 to R.S. Ohl*, issued May 26, 1936. That is, the filtered carrier received from the transmitting station may be reconditioned and then used for obtaining automatic frequency control of the beating oscillator 20 and synchronization of the local carrier oscillator 30. Or, if desired, in accordance with the disclosure of the *Ohl patent*, the filtered carrier after being reconditioned and amplified may constitute the source of locally applied carrier oscillations in place of the local carrier oscillator 30.* * *" (Page 3, 2nd col., lines 6-20; emphasis added)

Actually, the Examiner brought this very paragraph to Kahn's attention as shown in the Certified Patent Office file (Exh. D-FF, p. 145). The Oswald/Ohl combination, the closest art, found by the Patent Office and the Courts, was fully considered and rejected by the Patent Office. Thus, the presumption of validity is strengthened.

The Oswald "paper patent" (i.e., *a patent never used*) *was giving scant attention by Oswald's direct subordinates at Bell Laboratories engaged in diversity research* (JA 811-812). This patent did not provide sufficient information (such as tube types or any other components) to enable one to build and test it to see if it would work. DCA's expert, Bingley, though thoroughly armed with hindsight, was unable to use the drawing of the Oswald patent to show *anticipation* and was forced to produce a *hypothetical circuit*, which was also never tested. *Furthermore, although Bingley admitted that he had no experience in diversity* (JA 1181, 1202, 1213) he repeatedly contradicted another DCA witness, Polkinghorn, (JA 1154, 1217-1219), *who worked directly for Oswald at the time of Oswald's invention*, and who had written papers and patents on diversity. Nevertheless, as the Appeal Court pointed out the "Trial Court was impressed by the testimony of DCA's expert Bingley" (Opp. 5942) and ignored DCA's witness Polkinghorn's frank authentic testimony describing Oswald's work.

DCA did not offer any testimony to refute Kahn's six reasons (JA 1285-1286) why the Oswald patent was never used, even by his own subordinates, and has remained merely a "paper" concept all these years.

Admittedly, these reasons are highly technical but this is to be expected in this sophisticated art. Fortunately, the U.S. Patent Office is staffed by specialists equipped to understand the most technical aspects of the various arts. Since the Patent Examiners are constantly reviewing patent applications, they are not only specialists in the art, but in the *prior* art. And unlike expert witnesses, who are paid by one side, they can be objective. The Courts have held that the presumption of validity is strengthened if the Patent Examiner considers the closest art, and since the

Patent Examiner was clearly aware of the Oswald/Ohl combination, which the Courts below have determined to be the closest art, the presumption of validity is strong.

Kahn also provided a mathematical analysis based upon a definition of a key word [5] used in the Oswald patent, which was necessary to DCA's use of their *hypothetical* circuit. This analysis, with mathematical certainty, proves that Oswald called for square root combining instead of ratio square combining. Manifestly, there is *no anticipation*. If the Lower Court can completely disregard the official patent office file and its final decision to issue '503, the presumption of validity, stated in 35 USC 282, is destroyed.

Late Claiming

(Questions Presented #4 (supra p. 3))

Claims 15 and 16 were declared invalid because:

> "... no claims of substantially similar scope were presented to the Patent Office ..." "... until more than one year after equipment substantially the same as charged to infringe had been on sale and delivered to customers". (App. D. Crt. Opinion)

Testimony established that the claims were supported by the original application and that these claims were narrower than the claims filed in the original application (JA 657-661). However, the Trial Court introduced a *new* interpretation of the so called "late claiming" doctrine [6] wherein late claiming applies to claims:

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5. This proof is based upon Defendant's definition of the key word in the Oswald patent "proportional". Accepting the DCA definition Oswald taught *square root* combining not *ratio square* combining. For example, when the signals have a 2 to 1 voltage ratio, square root combining would cause a blending of energy by 2 to 1, whereas Kahn taught blending of 16 to 1 ratio (Plaintiff's Reply Brief p. 16)

6. A thorough discussion of Late Claiming is Flocks & Neimark, Is There a Viable Doctrine of Non-Statutory Late Claiming as a Defense in Patent Litigation, 500 J. Pat. Off. Soc'y. 676 et seq (1968).

> " . . . which indeed may be more specific and limited than those originally presented" and it is "... immaterial to defense of late claiming whether or not the claims in suit were supported by the application as originally filed" (App.)

But since the *Patent Office encourages applicants to narrow* the scope of their claims thereby restricting their property rights and since narrowing of claims is widespread, such a remarkable and unprecedented interpretation of the patent law could create a most *serious disruption of the country's existing patent structure.* Other practical problems which may be created by this new doctrine have been commented upon by leading patent law specialists in a discussion of the instant case [7].

It is believed that this Court's consideration and review of this radical departure from prior interpretation of the "late claiming" doctrine is urgently required [8].

Infringement

(Questions Presented #3 (supra p. 2))

As mentioned above, Kahn's "ratio squaring" breakthrough in diversity reception met with approval by Kahn's peers throughout the world. Mack of M.I.T., also one of DCA's witnesses, admitted that Kahn's publication had

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7. PATENT LAW PERSPECTIVES, Donald R. Dunner, James B. Gambrell, Stuart A. White, Irving Kayton, 1974 DEVELOPMENTS, para. A.7 *Late Claiming and New Matter*, Matthew Bender, New York, New York, a copy of which is attached to Kahn's Petition for Rehearing to the Court of Appeals.

8. Even if this new doctrine is accepted, the Appeal Court's affirmation of late claiming cannot be accepted. While concluding on the one hand that Claims 15 and 16 of the Kahn patent was not infringed and that *the DCA system did not operate in the manner taught by Kahn,* the Court on the other hand decided that the claims were made late because the claims were presented "more than one year after equipment substantially the same as they *charged* to infringe had been on sale and delivered to customers". (App.) (Emphasis added)

The inconsistency of such findings; i.e. noninfringement and late claiming *based on the Defendant's equipment,* which supposedly operated in a different manner, is apparent.

"completely changed the direction of my (his) work" (JA 868) and then he and others at M.I.T. asked DCA to use Kahn's ratio squaring system to solve their serious problem (JA 888 to 889).

As discussed below, DCA engineers authored a number of technical papers and patents, describing their use of ratio squaring. Prior to the trial, DCA furnished Kahn *technical books written by DCA engineers for their Government and other customers.* DCA then formally *stipulated* the accuracy of these books.

Nearing the close of the trial, DCA offered an employee witness, Gruber, *who impeached his own technical book*[9] and testified that by recent testing he had determined that DCA did not actually use ratio squaring but ratio sixing or some other high exponential law. Thus, DCA claimed that the branch receivers were controlled to produce an altogether different type of blending than specified in their book. Gruber, DCA's chief engineer (a former student of Kahn) furthermore testified that, although (a) they made such equipment for 15 years, (b) during which time DCA engineered at least four models of the equipment, (c) he and other engineers had written papers and patents describing their equipment, and (d) passed severe Government tests, he first learned how the equipment worked in the "past few weeks". (JA 964) This change in position, in complete disregard of the pretrial stipulation, altered the entire infringement fact pattern and was contrary to numerous other DCA publications.

The District Court, in a footnote, (Footnote 16) dismissed the problem of the formal stipulation, stating that Kahn had selected portions of DCA's books out of context. DCA had originally urged such a finding in their brief. If DCA really believed that an *accurate quotation of the basic diversity specification* is out of context and a clear

9. See Appendix for (a) the final two questions of Gruber's direct testimony impeaching the stipulated book, and (b) the applicable paragraph of the stipulation.

supporting statement describing the *combiner's branch receiver's characteristic* during *non*-extreme conditions (which is the situation 90% of the time) is out of context, why did they devote the last 26 out of a total of 44 pages of direct testimony of their only witness of fact on infringement to lead up to an impeachment of the *very section Kahn cited in the stipulated book*? There is nothing out of context when DCA, in their technical specifications stated:

> "Type of Combining — Optimum ratio baseband combining". (Exh. P24, p.1-8)

(The book issued by DCA for another DCA model, 2600 stated:

> "Type of combining - Post Detection Optimum Ratio . . ." and
>
> "combining — maximal ratio . . .")

The expert witnesses, from *both sides*, agreed that "optimum ratio" and "ratio square" and "maximal ratio" were used interchangeably in the art. (JA 336-337, 978-979, 992-993, 1244-1245 and Exh. D-L p. 1081) The Government purchases equipment on the basis of specifications which must be met.

Kahn prays that this Court treat the formal stipulation as the clearest proof and binding and give the proper weight to DCA's technical book's statement that their diversity equipment uses "*approximate square law characteristics . . . for best signal-to-noise combiner output*" (Exh. P24, p. 4-33) (Emphasis added). DCA books also describe the use of a separate control path incorporating the means Kahn taught for slowing down the speed of change in gain of the branch receivers to change the blending as per the '503 patent. This square law branch receiver gain characteristic, following slow fading, not noise, is the concept first taught by Kahn, accepted by

M.I.T., and used by RCA, GE, Western Union, Raytheon, the Defense Department and NASA [10].

There is infringement. Due process requires that the stipulation be treated as the clearest proof and be absolutely binding.

Attorney Fees

(Questions Presented #2 (supra p. 2))

The complexity of technology has grown exponentially in recent years. Faced with such technology, the Courts are forced to decide technical issues with the help of "expert" testimony. In almost any patent case diametrically opposed testimony is supplied by two sets of "experts" and this testimony, in many instances, is, to say the least, confusing.

Fortunately, the errors made by the Trial Court in finding bad faith in the instant case, can be recognized without a detailed study of the technology. There are *sign posts* which allow this Court to determine which side is correct and if Kahn acted in good faith.

The Trial Court found that Kahn confused the Patent Office and did not inform them of Ohl. *But, as discussed above, the Patent Examiner cited Ohl to Kahn in the course of the patent prosecution as stated in the Certified Patent Office File Wrapper* (Exh. D-FF, pp. 135-145). The examiner carefully considered the Ohl/Oswald combination, the closest art.

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10. The Trial Court also found that one of the differences between DCA's equipment and the system claimed in patent '503 was that DCA's system was a "hybrid" operating as a combiner some of the time and as a switching system at other times. This is a correct finding. DCA's stipulated books confirm the fact. But stipulated book (Exh. P24) says that "between extremes" it follows ". . . the approximate square law characteristic". Thus, the *non-extreme* mode is ratio squaring. A device that infringes even part of the time, infringes. The fact that it does not infringe *during extreme* conditions does not avoid infringement. It is notable that most system operation (about 90%) is inbetween the "extreme" modes.

The Trial Court also found bad faith because Kahn did not bring a well known early (1931) publication, (Peterson, Beverage & Moore) (Exh. P13) of RCA (*one of Kahn's licensees*) to the attention of the Patent Office. *This article is, in fact, not relevant.* Moreover, the certified Patent Office file shows that Kahn's attorney cited a short publication (Kahn Dep. Exh. I), by Moore, one of authors of the RCA article describing his early work and discussing his earlier paper, and *Kahn in citing this publication labelled it an "attack"* (Exh. D-FF pp. 52-53). Actually Kahn cited the Moore article to the Examiner on three separate occasions. It is inconceivable that Kahn would follow such a procedure in an attempt to conceal this classic work.

But more importantly, this early RCA work had nothing to do with "ratio squaring". The above description of the invention stressed that the change in relative gains of the signals during combining (blending) must be performed *slowly*. This excludes *instantaneous* "square law devices" and the '503 patent specifically *warns against their use*. Peterson et al, and *all of the other prior art in this case, except Oswald*, used instantaneous square law devices. Actually, RCA abandoned the square law detector system by the 1940's (Exh. P7) and adopted the "switching system" as did the rest of the industry (JA 867, Exh. P7), because of distortion and noise in square law detectors. (A square law *detector* is inherently noisy in normal service and thus degrades the signal-to-noise ratio in diversity systems. (JA 274, 379-380, 913, 1231-1234). The "bible" of the radio engineering profession, Terman's "Radio Engineering", Second Edition [11] (Exh. P7) *1937*, after describing this RCA system specifically recommended a switching system

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11. Note that the Defendant and the Trial Court cited the First Edition of Terman's book as *prior art* and ignored the Second Edition. As shown above, the later book states that the original system was inferior to switching which, in turn, has since been mathematically and experimentally proven to be inferior to ratio squaring (Exh. D-P, pp. 147-148)

as a "better arrangement that would *avoid the distortion of the square law detectors*". [12] (Emphasis added) (Exh. P18)

Mack of M.I.T., DCA's witness stated that he would be fired "that day" if he used square law detectors for diversity reception. (JA 913)

Kahn, as well as most communications engineers working in this field was, of course, aware of the RCA square law detector system because it was described in the first English language publication on diversity systems. Anyone with the slightest interest in this art knew of the RCA technique and there was no reason for Kahn to cite it to the Patent Examiner, an expert in prior art. Nevertheless, as pointed out above, Kahn, by citing the Moore publication and labeling it an "attack", clearly reminded the examiner of this work. There was no attempt to conceal the RCA system work and it (and all the other diversity systems cited as prior art by DCA using square law detectors) *was not relevant art in any event.*

The Trial Court also erred in finding that Kahn acted in bad faith in commencing this suit.

Prior to commencing this suit, Kahn and his attorney, March, carefully analyzed; (a) Defendant's two patents covering their equipment (JA 524), (b) three engineering articles describing DCA equipment authored by DCA senior engineers (JA 524, 1342-1356), and (c) reviewed

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12. Apparently the Courts below (and possibly DCA) were confused by the subtle, but extremely important, engineering difference between the *slowly changing* square law gain characteristics used in ratio squaring and disclosed in patent '503, and the *instantaneous* square law device system of Peterson, Beverage & Moore, used and abandoned (Exh. P7) by *Kahn's licensee, RCA.* The RCA system did *not* use a separate control path and a "low pass filter" (a device which slows down changes in electric waves) to slow the blending. Thus, noise, which is much faster than signal fades, participated in the squaring, ruining the signal-to-noise gain. *DCA and Kahn's licensees,* followed the '503 patent which discloses a control circuit with a "Low Pass Filter". This is one of the main reasons why RCA failed and later adopted Kahn's teachings, publicly credited Kahn (Exh. P17) and took a license.

various brochures specifying DCA equipment (JA 524). This detailed study convinced Kahn and his patent attorney, March, that there was indeed infringement.

(The Trial Court partially based its harsh finding of bad faith on its understanding of *a document never placed in evidence*, Kahn's deposition (JA 141). Kahn never had an opportunity to inform the Court as to the meaning of that highly technical testimony. This is clear error and a violation of due process.)

In addition, Kahn, prior to commencing the suit, interviewed the Chief Engineer of DCA's major customer, Page-Northrop, (also a Kahn licensee) to insure that there was indeed infringement. *Kahn did not commerce this suit without being certain there was sufficient basis for an infringement charge.*

The Trial Court, while not passing on the question of laches, *made the much more serious finding of bad faith based upon laches.* (Not being an attorney, I was not aware of the concept of laches prior to the instant suit). The following is a summary of the facts, detailed elsewhere. (Kahn Brief to Court of Appeals pp. 61-69)

There was an interval of 3 2/3 years between the time DCA refused Kahn's offer of a license claiming non infringement and the restart of negotiations. Kahn did not charge DCA with infringement in his initial offer, but he later received evidence of infringement from Page/Northrop, a Kahn licensee and a major customer of DCA. Kahn then asked DCA to reconsider their refusal of a license.

During the above mentioned 3 2/3 year interval, Kahn, on advice of counsel, initiated a suit against Western Union (WU). The WU suit was terminated when WU paid for all past infringement and took a license. Deducting the time during which Kahn was pursuing the WU suit, there was a net delay of 2 1/4 years. There was no finding that DCA was prejudiced by the delay. No cases were cited finding laches for such a short delay, *let alone finding bad faith.*

It is now necessary to complete the defense against the charges of bad faith in two related matters. One is the charge of having failed to conduct discovery activities and the second is that Kahn had insufficient evidence of infringement to litigate this suit. Firstly, while believing that discovery is *optional*, (having been so advised by his then attorney just prior to Kahn's replacing him) Kahn now fully agrees that he should have taken advantage of discovery *because it would have helped his case*. And this is why, as soon as he learned that his attorney had delayed discovery so that time ran out, Kahn substituted Mr. McPhee as counsel.

Immediately Mr. McPhee requested a delay in the trial date, but the Trial Court refused any delay whatsoever and did not allow McPhee to explain his sudden substitution, 26 days prior to the 9 day trial. Thus, Kahn was severely damaged by the inaction of his original attorney. But, unless it is bad faith, for a layman not to know the Federal Rules and Practice of discovery, Kahn is free of bad faith. Was DCA damaged because Kahn's case was weakened? If DCA was damaged, they should have joined in a request for delay instead of opposing it. Actually DCA, instead of being damaged by Kahn's lack of discovery, *took maximum advantage of it by introducing surprise testimony* which will be discussed next. Bad tactics may be ascribed to Kahn or rather to his first attorney, but bad faith should not be charged against Kahn.

Your Petitioner has, as noted above, been found to have acted in bad faith, a finding that is most difficult for him to accept. It is necessary for him to provide the Court with facts, fully supported by the record of this ligation, which, while not pleasant in their implication, demonstrates the urgent need for this Court to set guidelines for the Lower Court's use of the term bad faith in patent causes based on complex technology.

Late in the trial Mr. Ferrill, DCA's attorney, while closing his direct examination of Gruber saved the final two

questions to test the accuracy of the key section of DCA's engineering book (manual) covering the 2500 model (post App. A32-A33). These questions afforded Gruber, DCA's Chief Engineer, the opportunity to impeach the very paragraph that proves that DCA used square law control, not the higher law control which both Lower Courts found. (Kahn and his attorney, Mr. McPhee, were *surprised* because they had believed that they had been relieved of proving this decisive point of square law control because, DCA had furnished them the technical book and had formally stipulated and admitted its accuracy. Otherwise, what was the purpose of the book and what was the purpose of the stipulation). Gruber also testified that Mr. Ferrill had instructed him to make measurements of this very control law (JA 964) and this measurement was made by Gruber just before Mr. Ferrill signed the stipulation

Mr. Ferrill should not have signed the stipulation if he truly believed that DCA's equipment did not have a square law characteristic as claimed in their book. He should have warned Mr. McPhee of the situation and he should not have charged *Kahn* with bad faith in this matter.

Due process requires that DCA be bound by their stipulation and that Kahn should be cleared of the charge of bad faith.

Furthermore, and most importantly, did DCA, for a period of 15 years, sell their customers, including the U.S. Government, falsely labeled devices? Or alternatively, did they misrepresent their equipment's characteristics to the Trial Court in order to avoid a finding of infringement? Recognizing the near impossibility of selling engineering oriented customers falsely marked equipment for a 15 year period, and considering DCA's numerous publications written before this suit started, one is forced to conclude that the misrepresentation was made to the Court.

Not only did the Trial Judge accept Gruber's remarkable testimony and find non-infringement, but he found

that *Kahn* had acted in bad faith in pursuing his claim of infringement based upon the formal stipulation Gruber violated.

The Trial Court's acceptance of surprise testimony contradicting a stipulation to destroy Kahn's patent property rights, to find bad faith and to subject him to a *claim of $165,000* in attorney fees, is manifestly unjust.

Considering *each* of the above described findings of bad faith, it would follow that no independent inventor should risk going to Court [13]. He is gambling that, in a few days of adversary proceedings, he can transfer to a Jurist, no matter how brilliant, information which may have taken him decades to understand. And, if he fails, he will not only destroy the fruits of his research, but endanger his fortune and even his good name. The stakes are just too high.

Unless *strict guidelines* as to the interpretation of 35 USC 285 are set, halting the wave of huge fines against inventors, the Courts, for all practical purposes, will be closed to independent inventors.

CONCLUSION

For the foregoing reasons, the Petition for a Writ of Certiorari should be granted.

Respectfully submitted,

LEONARD R. KAHN
Petitioner

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13. Since a patent property right is defined in 35 USC 154 as "... the right to exclude others ...", it follows that, if the inventor is effectively denied access to the Courts, his property is *confiscated*.

UNITED STATES COURT OF APPEALS
FOR THE SECOND CIRCUIT

No. 981 September Term, 1973

Decided December 10, 1974

Petition for Rehearing
Denied
January 9, 1975

Docket No. 73-2848

LEONARD KAHN,

Plaintiff-Appellant,

-against-

DYNAMICS CORPORATION OF AMERICA

Defendant-Appellee

BEFORE:

Smith and Timbers, CJJ,
and Tyler, DJ.

PER CURIAM:

Petition for rehearing filed by plaintiff-appellant is denied, except to the following extent:

At page 5943 of the slip opinion herein, there appear the following sentences:

> "Kahn's circuit was anticipate by the Oswald patent with one possible distinction, which distinction nonetheless was anticipated by the Ohl patent. Accordingly, the trial court was clearly within the limits of its discretion to determine that the 503 patent was anticipated by the prior art, pursuant to 35 U.S.C. 102."

Although the trial court did make such a finding, 367 F. Supp. 63, at 72, and notwithstanding that the point does nothing to change the ultimate result, we conclude that the above sentences should be deleted and the following language substituted therefor:

> "Consequently, we accept, with a minor qualification, the trial court's finding that Kahn's circuit was anticipated by the Oswald Patent with one possible distinction, which distinction nonetheless was anticipated by the Ohl Patent. See 367 F. Supp. 67, at 72. At first blush, this determination seems contra the general rule that, upon challenge under Section 102, the challenging party must prove that all elements of the invention, or equivalents thereof, are to be found in a preexisting single structure or description. See, e.g. Scaramucci v. Dresser Industries, 427 F. 2d 1309, 1313-14 (10th Cir. 1970). Particularly since Oswald himself proposed the change later embodied in the Ohl Patent, and because Oswald's

> patent in itself disclosed the principle of ratio-squared combining in a diversity system with a method of operation similar to the Kahn disclosures, we think the additional reference to Ohl by the trial court was insubstantial and thus unnecessary to establish the Section 102 defense. Shelco, Inc. v. Dow Chemical Co., 466 F. 2d 613, at 614 (7th Cir. 1972)."

Petition for rehearing denied in all other respects.

Dated: January 9, 1975

(signed)
J. JOSEPH SMITH, Circuit Judge

(signed)
WILLIAM H. TIMBERS, Circuit Judge

(signed)
HAROLD R. TYLER, District Judge

UNITED STATES COURT OF APPEALS

FOR THE SECOND CIRCUIT

No. 981—September Term, 1973.

(Argued May 21, 1974 Decided December 10, 1974.)

Docket No. 73-2848

LEONARD KAHN,

Plaintiff-Appellant,

—against—

DYNAMICS CORPORATION OF AMERICA,

Defendant-Appellee.

Before:

SMITH and TIMBERS, *C.J.J.* and TYLER, *D.J.**

Appeal from an opinion and judgment of the United States District Court for the Southern District of New York, 367 F. Supp. 63 (Tenney, *J.*), holding plaintiff's patent invalid and dismissing the complaint with costs to the defendant, including attorneys' fees, because the case is exceptional within the purview of 35 U.S.C. § 285.

Affirmed and remanded for determination of the amount of attorneys' fees.

LAURENCE B. DODDS, Esq., Great Neck, New York (Joseph R. McPhee, Jr. and George Pollack on the brief), *for the Plaintiff.*

* United States District Judge for the Southern District of New York, sitting by designation.

THOMAS M. FERRILL, JR., ESQ., and ALLEN B. HAZELTINE, ESQ., Blue Bell, Pennsylvania, *Attorneys for Defendant-Appellee.*

TYLER, *D.J.*

Plaintiff Leonard R. Kahn sued Dynamics Corporation of America ("DCA"), charging that certain models of the "REL" radio receiving systems, made and distributed by DCA, infringed Kahn's patent No. 3,030,503 issued on April 17, 1962 (hereinafter the "503 patent"). He appeals from the trial court's denial of his claims and assessment of liability on his part for attorneys' fees. Since we believe there is ample evidence to support the reasoning and judgment of the trial court, we affirm in all respects but remand the case for determination of the exact amount of attorneys' fees to be awarded to defendant.

After the trial, the district court entered judgment on the basis of an opinion holding that the Kahn patent was invalid in view of certain prior art, 35 U.S.C. §§ 102 and 103; holding that the 503 patent was invalid because of Kahn's failure to disclose material facts and because he made material misrepresentations to the Patent Office; determining that claims 15 and 16 of the 503 patent were invalid because they were first asserted in and after August, 1961, more than one year after equipment identical to that charged to infringe had been on sale and distributed to customers; holding that plaintiff had failed to sustain his burden of proving infringement; dismissing the complaint with costs; and determining that, because the case is exceptional within the purview of 35 U.S.C. § 285, defendant is entitled to recover attorneys' fees as part of its costs.

Kahn has asserted that his patent covers all diversity radio receiving systems wherein the outputs of the diver-

sity receiving branches are combined linearly in phase by any circuit which causes the strength of the signal from each branch, at the point where the signals from all branches are combined, to be proportional to the square of the strength of the signal received by the antenna for that branch. The practical core of this patent dispute is that both the 503 patent and the devices manufactured by DCA are intended and designed to overcome the problem known even to laymen as "fading" of radio signals.

As is commonly known, radio signals take many courses in traveling substantial distances from a transmitter to a receiver. While radio signals can, but rarely do, follow the earth's curvature, they usually travel upward away from earth and are refracted back to earth by the ionosphere. Indeed, radio waves may be refracted once, or they may bounce back and forth between the earth and the ionosphere several times before they reach a receiver. Thus, signals intercepted by the receiver system antennae may have traveled over widely different paths of unequal distances.

Radio signals are cyclical in nature; that is, they have crests, or positive phases, and troughs, or negative phases. Therefore, the crest of a portion of a signal traveling on one path may arrive at the same time as the trough of a portion of the same signal traveling on another path. Moreover, the relationship of the phases at the receiver may vary from 0 to 360 degrees, resulting in either a weakening or a strengthening of the signal when the portions are combined. In sum, continuous variations from a full reinforcement (0 degree or 360 degree phase relationship) to complete cancellation (180 degree phase relationship) result in what is called fading.

As the trial court also found, a radio signal does not occupy a single frequency but includes a band or range of

frequencies. Each frequency is affected differently by the refractions from the ionosphere to the earth. As a consequence, the various signals within a frequency band may be affected differently so that the relationship among their strengths at the receiver is not the same as it was at the transmitter. This condition produces what is known as selective fading.

Kahn's 503 patent is intended to reduce these fading problems by making use of a diversity reception system for improving signal strength in relation to noise level. By this method, two or more receivers are simultaneously employed to receive signals transmitted over long distances. After linear amplification and demodulation, the signals are combined in phase and in proportion to the squares of the strengths of the incoming signals. Thus, should the incoming signals have relative amplitudes of three to two, they will be combined in a ratio of nine to four. The subject matter of the 503 patent amounts to a claimed improvement in the field of diversity receiving systems effected by utilizing two or more receivers in combination to overcome the effects of signal fading which may result in a low or virtually negligible signal reception in one or more of the multiple receivers.

The 503 patent was granted to Kahn on April 17, 1962, upon a continuation of Kahn's original application (No. 365,964) which was filed July 3, 1953, but abandoned on December 13, 1960, after continued disallowances by the Patent Office. Accompanying the continuation application was a letter setting forth arguments with respect to the so-called Oswald Patent (No. 2,219,749, issued October 29, 1940). The significance of this letter was that theretofore the Patent Office had consistently concluded that the teaching of the Oswald Patent clearly embraced the Kahn application. Indeed, on June 20, 1961, the continuation applica-

tion of Kahn was again rejected as being substantially met or anticipated by Oswald. Indefatigable, Kahn and his counsel nevertheless filed an amendment in August, 1961, wherein they contended, *inter alia*, that the system described by Oswald could not work because of random phase variations of the signals to be combined. The last contention appears to have been largely responsible for finally persuading the Patent Office to issue a patent. But at trial Judge Tenney found the contention completely lacking in merit because the Oswald patent describes a system which would satisfactorily solve the random phase variation problem. In other words, the trial court accepted the testimony of defendant's experts which established that, by proceeding on the basis of the Oswald patent, a satisfactory diversity system using ratio square combination could be devised without undue difficulties caused by random phase inconsistency. The system contemplated would operate by reconditioning the reduced amplitude carrier of each receiving branch and by introducing each branch's reconditioned carrier into its second detector.

We believe that the testimony at trial amply supports the trial judge's conclusions on the teaching of Oswald and on other prior art in the field. We have little to add to the specific findings and reasoning of the trial court on this and other matters. Nevertheless, some of the evidence at trial and findings of the trial court will be explored to determine whether Kahn misled the Patent Office and proceeded in bad faith in other ways. Such actions would be sufficient to make this an "exceptional case" within the meaning of 35 U.S.C. § 285 and to support the trial judge's exercise of discretion under that statute in awarding attorneys' fees to the defendant.

As Judge Tenney recognized, the presumption of validity of a patent may be strengthened where the Patent Office

has granted it with knowledge of relevant prior art, here most particularly the Oswald Patent. However, that presumption should not attach where there is evidence that the Patent Office has been misled as to the true import of prior art references. Cf. *John Deere Co. v. Graham*, 333 F.2d 529, 530 (8th Cir. 1964), *aff'd*, 383 U.S. 1 (1966). The presumption has also been weakened in recent years by the fact that the Patent Office is too overworked to give adequate attention to patent applications and grants. See *Ansul Company v. Uniroyal, Inc.*, 301 F. Supp. 273, at 280 (S.D.N.Y. 1969), *aff'd in relevant part*, 448 F.2d 872 (2d Cir. 1971), *cert. denied*, 404 U.S. 1018 (1972); cf. *Graham v. John Deere Co.*, 383 U.S. 1, 18 (1966). Here on the basis of persuasive evidence, the trial court found that Kahn made no new contributions to the art but, at best, reworked and republicized information previously developed by others. Indeed, Judge Tenney found that some of the information Kahn used was obtained from publicly available works which he had encountered many years ago while working as an engineer for Crosby Laboratories.

The record clearly indicates that the Oswald Patent contains a full disclosure of the principle of ratio-squared combining in a diversity system. Moreover, the mode of operation and the circuitry described by the Oswald Patent seem to compare closely to those disclosed by the 502 patent. Not surprisingly, therefore, the trial court was impressed by the testimony of DCA's expert Bingley. He prepared a hypothetical circuit which in reality was the Oswald Patent circuit incorporating the change which Oswald himself had proposed and which was disclosed in the Ohl Patent (No. 2,041,855, issued May 26, 1936). Unfortunately for Kahn, there is no evidence that the patent examiner knew of the Ohl Patent or that it was called to his attention by Kahn. Therefore, the presumption of validity accorded a patent granted in light of prior art is

inapplicable. Consequently, we accept the trial court's finding that Kahn's circuit was anticipated by the Oswald Patent with one possible distinction, which distinction nonetheless was anticipated by the Ohl Patent. Accordingly, the trial court was clearly within its limits of discretion to determine that the 503 patent was anticipated by the prior art, pursuant to 35 U.S.C. § 102. We scarcely need add that our review of the record indicates likewise that any differences which might be perceived between the subject matter of the 503 patent and the prior art are such that "the subject matter as a whole would have been obvious at the time the invention was made to a person" such as an electrical engineer like Kahn. 35 U.S.C. § 103.

We also believe that there is ample evidence to support the conclusion of the trial court that claims 15 and 16 of the 503 patent, the only claims as to which Kahn attempted to prove infringement by DCA, are invalid. They were not presented either under the original or the continuation application until more than one year after equipment substantially the same as that charged to infringe had been on sale and delivered to customers. See 35 U.S.C. § 102(b); cf. *Muncie Gearworks Inc.* v. *Outboard Marine & Manufacturing Co.*, 315 U.S. 759 (1942).

Finally, the trial court determined that the DCA systems operate quite differently from the system contemplated by the 503 patent. Diversity receiving systems conforming to the specifications of that patent would combine the signals from each branch in proportion to the squares of their strengths as received, regardless of how greatly the relative strengths of the signals differed. DCA's system or systems do not operate this way; in effect, they are hybrid systems. If the signals in the branches differ in strength by less than two to one, they are combined in proportion to a varying power of the input signal strengths.

When incoming signals of the branches differ in strength by more than two to one, only the signals from the branches having the stronger input contribute to the output; the weaker signal contributions are switched off. As the trial court put it, defendant's systems are both combining and selective. Not surprisingly, therefore, Judge Tenney determined that Kahn's expert witness could not explain "any definitively understood relation between the claims in suit and the disclosure in Kahn's specifications and drawings." For this and other reasons supported by the evidence, we conclude that the trial court was correct in holding that DCA's devices do not infringe the Kahn Patent, most particularly claims 15 and 16 thereof.

We come now to the issue of whether DCA is entitled to an award of reasonable attorneys' fees under 35 U.S.C. § 285. In what is perhaps the leading case in this circuit on this subject, the United States District Court for the Southern District of New York enunciated the rule that "only where the court is convinced that the patent is so wholly devoid of substance that the plaintiff could not have had a bona fide belief in its validity shall it award the defendant reasonable attorneys' fees pursuant" to the statute. *Indiana General Corp.* v. *Krystinel Corp.*, 297 F. Supp. 427, 449 (S.D.N.Y. 1969), *aff'd*, 421 F.2d 1023 (2d Cir.), *cert. denied*, 398 U.S. 928 (1970). Mention has already been made that the trial court, well aware of this principle, made a finding that Kahn had misled the patent examiner with respect to the true nature, scope and capabilities of the method or system disclosed in the Oswald Patent. In addition, the trial court made a finding that Kahn deceived the Patent Office by withholding from it the nature and significance of highly relevant papers, the contents of which were familiar to Kahn as early as the 1930's when he was working for Crosby Laboratories.

Moreover, while the trial court did not pass upon DCA's asserted defense of laches, it did note that in September, 1962, less than six months after his patent had issued, Kahn charged by letter that DCA might be infringing the 503 patent. As a result, DCA's lawyers studied the 503 patent and, in apparent good faith, replied to Kahn's attorneys in November, 1963, that it would seem clear that there was no possible infringement by the devices put out by the REL division of DCA. Apparently, there then followed a considerable period in which there was no communication between the parties and no further charges of infringement on behalf of Kahn. The record indicates, however, that in 1969 defendant had written Kahn's attorneys explaining in greater detail why the REL devices did not infringe the 503 patent. Surprisingly, ten days after that letter, this suit was instituted. However, for the three year period thereafter until trial was reached, plaintiff and his attorneys made absolutely no attempt, through discovery or otherwise, to test and consider the contentions of DCA that there was no infringement.

On the basis of these findings, the trial court inferred that Kahn's purpose in commencing this litigation was to force DCA to obtain a non-exclusive license under the 503 patent by threatening DCA with a suit, the defense of which would entail considerable expenses. Additionally, examination of the discovery materials in the case and of the performance of the plaintiff and his witnesses at trial fortified the trial court's conclusion that Kahn and his lawyers made no meaningful effort to establish just how the REL devices infringed the 503 patent. The trial court also analyzed the specific preparations and arguments of DCA, in particular those used in its pretrial efforts to persuade Kahn that his claims were lacking in merit. It finally concluded that Kahn failed to use reasonable and responsible care in assessing his claims prior

to and during suit and that this suit was commenced and prosecuted in bad faith on the part of plaintiff. Therefore, the trial judge determined that the case was exceptional and justified the award of both costs and attorneys' fees to the defendant. See *Kaehni* v. *Diffraction Co., Inc.*, 342 F. Supp. 523, 535 (D.Md. 1972), *off'd without op.*, 473 F.2d 908 (4th Cir.), *cert. denied*, 414 U.S. 854 (1973).

In patent suits, no less than other types of suits in the federal courts, it is the general rule that awarding attorneys' fees to the prevailing party is not favored absent a specific statute providing therefor. Here we have such a statute, but the relief it provides is not usually granted. The patent suit involved must qualify as an "exceptional" case. It is obvious from the language of 35 U.S.C. § 285 that Congress intended the trial court to exercise its sound discretion in deciding whether a case was sufficiently exceptional to vitiate the normal rule that each party bear his own attorneys' fees.

Fraud on the Patent Office would certainly be enough to make a case exceptional, "[b]ut conduct short of fraud and in excess of simple negligence is also an adequate foundation for deciding that a patent action is exceptional." *Monolith Portland Midwest Co.* v. *Kaiser Aluminum and Chemical Corp.*, 407 F.2d 288, 294 (9th Cir. 1969). The trial court's findings that plaintiff was dilatory, that he had misled the Patent Office, and that he had failed or refused to meet the specific reasoning and arguments of DCA concerning the infringement issue were more than ample to support a finding of conduct "in excess of simple negligence" and a determination of bad faith on the part of plaintiff in commencing and litigating this suit. We agree with the trial judge that such negligence and bad faith are sufficient to justify classifying the case as exceptional and awarding attorneys' fees to

the defendant. We find no errors in the trial court's determinations and no abuse of discretion in its award.

In conclusion, we note that the record does not indicate that the trial court has fixed the exact amount of the attorneys' fees to be awarded to DCA. Hence, we affirm the judgment and order appealed from in all respects but remand the case to the trial court for determination of this amount. Costs of this appeal are awarded to defendant.

Joseph R. McPhee, Jr., Garden City, L.I., N.Y., for plaintiff.

Thomas M. Ferrill, Jr., Blue Bell, Pa., for defendant.

OPINION

TENNEY, District Judge.

This is a suit for the alleged infringement of U.S. Patent No. 3,030,503 granted to plaintiff Kahn, a resident of New York, on April 17, 1962 on a "continuation" of Kahn's original application Serial No. 365,964, which was filed July 3, 1953 and abandoned December 13, 1960 after repeated rejections by the Patent Office. The subject matter of plaintiff's patent is an alleged improvement in the field of diversity receiving systems in which two or more radio receivers are utilized in combination to overcome the effects of signal fading resulting in low or negligible signal reception in one or more of the receivers. Defendant, Dynamics Corporation of America ("Dynamics"), is a New York corporation, having its principal office in New York City.[1] Dynamics, through its Radio Engineering Laboratories ("REL") has been a leading manufacturer and supplier of diversity radio receiving equipment. This court has jurisdiction of this action (28 U.S.C. §

1972 the Referee issued an order staying all litigation against Dynamics. On October 20, 1972 the Referee issued an order vacating, as to the instant case, the stay granted in the August 2 order.

1338 (1970)) and venue is properly laid in this district (28 U.S.C. § 1400 (1970)).

Kahn alleges that claims 15 and 16 of his patent[2] are infringed by the diversity receiving equipment designated as Series Nos. 2300, 2500 and 2600 made and sold commercially by Dynamics.[3] Dynamics contends, after trial of the issues herein to the court, (a) that Kahn has failed to meet his burden of proving infringement; (b) that the Kahn patent is invalid in view of the prior art; (c) that if Kahn's claims (*i. e.*, 15 and 16) could be construed as applicable to Dynamics' diversity receiving systems, said claims would be invalid on the ground of late claiming; and (d) that the Kahn patent is unenforceable against Dynamics because of Kahn's laches.

Before considering Dynamics' defenses to the present action, it is necessary to consider briefly the alleged scope of the Kahn patent. Kahn asserts, in essence, that his patent covers all diversity radio receiving systems in which the outputs of the diversity receiving branches are combined linearly in phase by any circuit which causes their strengths, at the point of combining, to be proportional to the squares of the strengths of the signals picked up by the respective receiving antennas for said signals. Such a system is designed to overcome the problem known as fading. Radio signals, in traveling long distances from the transmitter to a receiver system, may take many paths. While they may, but rarely do, follow the earth's curvature, usually they travel upward away from the earth and are refracted back to the earth by an ionized layer that exists above the earth (the ionosphere). They may be refracted back once, or they may travel back and forth between the earth and the ionosphere many times before they reach the receiver system.

As a result, the signals intercepted by the receiver system antennae may have traveled over widely different paths of unequal distances from the transmitter to the antennae. Since these signals are cyclical in nature, as are all radio frequency signals—*i. e.*, they have crest, or positive and null, or negative portions—the crest of a signal traveling one path may arrive at the same time as the null of the signal traveling another path and, when combined, the positive and negative portions effect complete concellation of each other. Intermediate stages of the relationship of crest and null may result in a weakening of the combined signals or, fortuitously, a major enhancement of the crests arriving at the same time. This continuous variation from a full equivalent to possible cancellation results in the phenomenon known as fading.

Furthermore, radio signal information does not occupy a single frequency but

2. These claims read as follows:

"15. A diversity receiving system adapted to obtain optimum signal-to-noise ratio comprising means for amplifying a pair of received signals in a pair of separate amplifying channels, means for comparing said signals to determine which is the weaker thereof as well as to determine the ratio of the stronger to the weaker signal, means for reducing the weaker signal and its noise during said signal amplification by a factor equal to the ratio of the stronger to the weaker signal, and means for adding the thus altered ratio signals in-phase subsequent to said signal amplification.

16. A diversity receiving system adapted to obtain optimum signal-to-noise ratio comprising means for amplifying a pair of received radiant energy transmissions in a pair of separate amplifying channels, the energy in one of said channels having a stronger signal level than the signal level in the energy of the other of said channels, means responsive to comparable portions of the energies being amplified in said pair of channels for determining the ratio of the stronger to the weaker signal in said pair of channels, means for relatively reducing the gain of the amplifying channel associated with the weaker one of said signals by a factor equal to the determined ratio of stronger to weaker signal, and means for adding the thus altered ratio signals in-phase."

3. It was stipulated that Series 2500 is representative of the Series 2300.

must include a band or range of frequencies, and each frequency is affected differently by the refractions from the ionosphere and the surface of the earth. Consequently, the band of frequencies received at one antenna over one path may not be of equal strength or signal level across the whole frequency band. This produces a fading effect known as selective fading. Kahn's patent is directed to a diversity reception system for improving signal strength in relation to noise level in which two or more receivers are simultaneously employed to receive signals transmitted over substantial distances and in which, after linear amplification and demodulation, the signals are combined in phase according to the rule of the ratio of the square of the incoming signals; *e. g.*, if the incoming signals have relative amplitude of three-to-two they will be combined in the ratio of nine-to-four. No claim is made, nor could it be, that Kahn invented diversity reception or even a diversity reception system in which signals are combined.

With regard to the issue of infringement we must recognize the fundamental principle that an invalid patent cannot be infringed. John Deere Company of Kansas City v. Graham, 333 F. 2d 529, 530 (8th Cir. 1964), aff'd, 383 U.S. 1, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966). We must likewise recognize that a patent is presumed valid and the burden of establishing invalidity rests on the party asserting it. *John Deere Company, supra*, 333 F.2d at 530. However, the presumption of validity is rebuttable, and when substantial evidence attacking the validity of a patent is introduced, the question of whether the patent constitutes an invention is then for the court, and the presumption is weakened if applicable prior art was not considered by the Patent Office. *John Deere Company, supra*, 333 F.2d at 530. Accordingly, we look first to the prior art and then to such disclosures of the prior art as were made to the Patent Office.

As early as 1931, Peterson, Beverage and Moore (engineers with the Radio Corporation of America ("RCA")) had successfully placed in operation a diversity receiving system for trans-Atlantic radiotelephone service which was used for many years for rebroadcasts of programs originating abroad. The RCA engineers described their system in the Proceedings of the Institute of Radio Engineers ("I.R.E.").[4] This system

4. H. O. Peterson, H. H. Beverage, and J. B. Moore, "Diversity Telephone Receiving System of R.C.A. Communications, Inc.", 19 Proceedings of the I.R.E. 562 (1931). Kahn's knowledge of this article appears more than likely. For a period of one year, from mid-1951 to mid-1952 Kahn's then employer, Crosby Laboratories ("Crosby"), carried out an investigation, under a U.S. Army Signal Corps contract, of the relative merits of different kinds of diversity radio receiving systems, wherein some of the different ways of utilizing the varying outputs of the plural radio receiving branches were analyzed and compared. Kahn was a main participant in this project. The first of four reports on this investigation reviewed and described several already known diversity receiving systems. Among these, and at pages 35–37 of said report, was an analysis and summary of the triple-diversity (three-branch) radiotelephone receiving system created and described by RCA engineers Peterson, Beverage and Moore in their article. It was noted in the Crosby report that the ratios of the combining were in accordance with the squares of the ratios at the branch antenna inputs, and, furthermore, the report observed that this was consistent both with what the RCA engineers themselves stated in their I.R.E. paper at page 567 and Terman's summary thereof in his textbook, Radio Engineering 491–92 (1st ed. 1932).
Excerpts from the Crosby report follow:

"In their equipment, the signal detectors are of the square law variety with the plates of the combining detectors connected together. Common automatic gain control is used. *It is pointed out that the signal output is proportional to the square of the received signal intensity.* Therefore, if the stronger signal is twice as strong as the weaker signals, there will be four times as much output derived from the stronger signal.

* * * * *

"*The importance of common automatic gain control operation was recognized in this article.* It was realized that if separate AGC's were used, the receiver

caused to be added together the detected signals, as received and amplified, with a common automatic gain control ("AGC") (sometimes referred to as an automatic volume control ("AVC")) resulting in ratio squaring of the signals. In accordance with the practice prevalent at that time, they used square-law detectors, which are special devices for withdrawing the modulation, or the audio wave, from the modulated wave.

In 1937, Friis and Feldman of Bell Telephone Laboratories ("BTL") described, in a paper,[5] a three-branch diversity receiving system and explained, with mathematical proofs, the signal-to-noise improvement made available by ratio squaring, the combining system they used therein, and concluded that, theoretically, ratio squaring was the maximal combining ratio.

Polkinghorn of BTL analyzed the Peterson, Beverage and Moore paper, and acknowledged the signal-to-noise improvement from ratio squaring, duplicating their work successfully. He also developed a triple-diversity receiving system for a multiple unit steerable antenna ("MUSA") receiving station employing single sideband with reduced carrier, which he described in the Proceedings of the I.R.E.[6] Polkinghorn provided a carrier reconditioner for each branch and successfully used circuits arranged to give ratio-squared operation, rather than equal gain combining, in order to enjoy the resulting improved signal-to-noise performance.

In 1939, patent applications were filed by Polkinghorn and by Oswald, another BTL engineer, for certain versions of ratio-squared diversity receiving systems—applications which issued as patents numbered 2,219,751 and 2,219,749, respectively, on October 29, 1940. In each of these patents, a common AGC is employed. In his patent, Polkinghorn relied on controlled gain amplifiers to inject controllably varied strengths of carrier frequency oscillations into his square-law detectors. Oswald, however, in his patent, did not rely on square-law detectors but used each of his gain-controlling rectifiers to control either an intermediate frequency amplifier stage just ahead of his detector (as Kahn would eventually propose in the patent in suit) or an audio amplifier stage responsive to the detector output. Oswald specified that the gain of his controllable amplifier is varied in proportion to the branch input signal strength. This is the condition which, in the Kahn patent disclosure, and identically in the Oswald patent disclosure, provides ratio squaring. That is, the signal versions as combined in each of these patents (Kahn's patent and the prior Oswald patent) are each proportional to the square of the corresponding antenna input signals.

In 1954, Kahn submitted a letter to the Institute of Radio Engineers recommending ratio squaring, which was published in the Proceedings of the I.R.E.[7] Although, as previously indicated, Kahn must have been aware of the prior work of Peterson, Beverage and Moore in which they had, decades earlier, combined components from their three diversity branches in proportion to the

supplying the weakest carrier would have the greatest gain and therefore the outputs of the component receivers would be almost equal." (Exh. CC at 35–36) (emphasis added)

Furthermore, the third quarterly Crosby report (Exh. DD at 25) noted that the use of ratio-squared combining had been analyzed and reported in the second quarterly Crosby report (not available), and the final report (Exh. EE at 21–30) recorded the comparison experiments conducted with ratio-squared combining, equal-gain combining and certain other modes.

5. H. T. Friis and C. B. Feldman, "A Multiple Unit Steerable Antenna for Short-Wave Reception," 25 Proceedings of the I.R.E. 841 (1937).

6. F. A. Polkinghorn, "A Single-Sideband Musa Receiving System for Commercial Operation on Transatlantic Radiotelephone Circuits," 28 Proceedings of the I.R.E. 137 (1940).

7. Leonard R. Kahn, "Ratio Squarer," 42 Proceedings of the I.R.E. 1704 (1954).

squares of the antenna input signals, he omitted any mention of that fact in his paper. Nor did he make any reference to the fact that each branch of the Peterson, Beverage and Moore diversity system used the then prevalent square-law detector, providing the diversity combining performance gain, with the signal-to-noise ratio improvement of ratio squaring, over a single receiver of similar vintage and similar prevailing detector type. As will be seen, Kahn, who had omitted in his I.R.E. paper any acknowledgment of what the RCA engineers had done long before, also omitted any such acknowledgment to the Patent Office, both initially and throughout the prosecution of his applications.[8] Furthermore, Kahn misrepresented the Oswald patent to the Patent Office examiner in a final, and unsuccessful, attempt to secure his patent.

As has been noted, the presumption of validity which attaches to a patent is weakened if applicable prior art is not considered by the Patent Office. *John Deere Company, supra*, 333 F.2d at 530. Accordingly, we turn to an examination of the prosecution of the patent claim in the Patent Office. On July 3, 1953 Kahn's original application, Serial No. 365,964, was filed. In that application he described and claimed a diversity radio receiving system having at least two branches, with a common AGC system provided to regulate the amplification (gain) of groups of intermediate-frequency amplifier stages in all branches in accordance with the signal strength in the strongest branch. In addition, a separate controlled-gain amplifier was provided in each branch, and so arranged as to have its gain varied in proportion to the signal strength of that branch, with the result that the versions of the demodulated signals as combined were proportional to the squares of the antenna input signal strengths. As indicated *supra*, Kahn did not disclose to the Patent Office his knowledge or the existence of the 1931 paper by Peterson, Beverage and Moore describing RCA's diversity radio receiving system having a common AGC system to regulate the amplification (gain) of groups of intermediate-frequency amplifier stages in all branches in accordance with the signal strength in the strongest branch, the circuits being so arranged that the versions of the demodulated signals as combined were proportional to the squares of the antenna input signal strengths.

On March 19, 1954, and again on November 14, 1956, Kahn's application was rejected as unpatentable over the Oswald Patent No. 2,219,749 granted October 29, 1940. On each occasion it was argued on behalf of Kahn that there was no teaching in Oswald of the specific ratio-squared relationship taught by Kahn. On January 30, 1958 the original application was again rejected for the same reasons and the rejection was made final. On July 30, 1958 both an appeal and an amendment acknowledging an interview with the examiner and arguing against the final rejection were filed to the Patent Office Board of Appeals. This amendment presented a new argument against a rejection based upon the Oswald patent—*i. e.*, that the Oswald patent does not provide for in-phase combination of signals, which Kahn asserted was essential to achievement of results in accordance with his proposal. The amendment was refused entry, and, after the filing of a brief on behalf of Kahn, the examiner's answer, and Kahn's reply, Kahn abandoned the original application and a "continuation" application was filed on December 13, 1960.

A letter accompanied this application urging its allowance, which set forth, in

8. Reference has already been made to Kahn's knowledge of the prior work of the RCA engineers referred to, and among the material upon which he relied before the Patent Office was an article by Dr. Brennan (D. G. Brennan, "Linear Diversity Combining Techniques," 47 Proceedings of the I.R.E. 1075 (1959)) in which Brennan made reference to the Peterson, Beverage and Moore system as probably being the maximal ratio system. Yet Kahn never cited this to the Patent Office.

particular, arguments with respect to the Oswald patent and included a list of publications purporting to demonstrate widespread recognition in the art of Kahn's alleged contribution. On June 20, 1961 the continuation application was likewise rejected as being substantially met by Oswald. Following this rejection, Kahn, and his attorney, presented arguments in support of Kahn's position at an interview with the examiner and the assistant primary examiner. The substance of these arguments was subsequently set forth in an amendment filed on August 18, 1961. One of the contentions made was that the system described by Oswald could not work because of random phase variations of the components to be added, which effect resulted from the use of a single oscillator coupled to Oswald's second detectors of both branches. But such contention ignores the fact that Oswald's patent describes reconditioning the reduced-amplitude carrier of the incoming signal of *each* branch and introducing each branch's reconditioned carrier into its second detector.[9] By so proceeding on the basis of the Oswald patent specification, the random phase problem would be avoided and the system disclosed in that patent, using reconditioned carriers in each of the branches as specifically taught by the patent, would operate as a satisfactory diversity system to effect ratio-square combining without any difficulties due to phase inconsistency.[10] This is borne out by the testimony of defendant's experts Brennan, Mack, and Bingley.

It is well settled that, in considering anticipation by prior art, the entire disclosure in a reference must be evaluated for what it fairly teaches one

9. Page 3. Col. 2, lines 6-29 of the Oswald Patent read as follows:

"If it should be desired to effect a greater degree of frequency stability, this may be done in the manner disclosed in Patent 2,041,855 to R. S. Ohl, issued May 26, 1936. That is, the filtered carrier received from the transmitting station may be reconditioned and then used for obtaining automatic frequency control of the beating oscillator 20 and synchronization of the local carrier oscillator 30. Or, if desired, in accordance with the disclosure of the Ohl patent, the filtered carrier after being reconditioned and amplified may constitute the source of locally applied carrier oscillations in place of the local carrier oscillator 30. As disclosed in the Ohl patent, the reconditioned carrier is supplied for demodulation at substantially constant amplitude regardless of fading in transmission, and therefore, if applied in the present system in substitution of the carrier oscillations generated locally by oscillator 30, the system is susceptible of and requires the same automatic gain control in accordance with the amplitude of the rectified received carrier energy of the corresponding branch that is utilized in the present invention."

10. In addition to having "overlooked" the workable means described in the Oswald specification, Kahn, and/or his attorney, misrepresented the meaning of two selected phrases from the Brennan paper (D. G. Brennan, "Linear Diversity Combining Techniques," 47 Proceedings of the I.R.E. 1075, 1081 (1959)) so as to conceal their real purport when read in context. Brennan, in pointing out that a maximal-ratio diversity system (ratio squarer diversity) "is a definite improvement over either scanning diversity or selection diversity" stated that "[t]his *observation* is essentially due to Kahn," noting however, that it was quite possible that the diversity system discussed by Peterson, Beverage and Moore in the Proceedings of the I.R.E. of April 1931 was actually a *maximal-ratio system*, albeit they referred to it with a connotation of switching. In their interview with the examiners, Kahn, and/or his attorney, according to the Remarks which they submitted, stated, in inviting the attention of the examiner to the Brennan paper, that Brennan had written that this type of system "is essentially due to Kahn." Thus, they attributed to Kahn not merely an observation of the advantages of the maximal ratio system, but the origination of it. Significantly, they continued to avoid calling attention to the Peterson, Beverage and Moore paper. Kahn claims that the Peterson paper was called to the attention of the examiner because Kahn called his attention to an "attack" on Kahn's 1954 letter to the I.R.E. by Moore, a co-author of the Peterson paper, in which "attack" Moore referred to the Peterson paper. However, Kahn did not furnish the examiner with a copy of the Moore "attack". Rather, he furnished only a copy of Kahn's reply, which made no mention of the Peterson paper.

of ordinary skill in the art. In re Mills, 470 F.2d 649, 651 (C.C.P.A.1972); In re Boe, 53 C.C.P.A. 1079, 355 F.2d 961, 965 (1966).

[8] While in general it is true that the presumption of validity of a patent may be strengthened where the Patent Office has granted it in the face of certain prior art—here the Oswald patent—this is not so where the Patent Office has been deceived as to the true significance of a reference. As was stated in Marasco v. Compo Shoe Machinery Corp., 325 F.2d 695, 697 (1st Cir. 1963):

> "It is true that the Patent Examiner cited the Malverdi patent in allowing Marasco's claims, but any presumption of validity to be gathered from that fact has been sufficiently overcome. Also, there is indication that the examiner's judgment may not have been based on evidence completely accurate. We are referring to a letter sent to the examiner by Marasco's attorney informing the examiner that the handle of the 'Ghini' machine was held in operative position only by manpower. The text of the Italian patent, a translation of which was possessed by the plaintiffs, stated the exact opposite."

See also Ansul Company v. Uniroyal, Inc., 301 F.Supp. 273, 280 (S.D.N.Y. 1969), aff'd, 448 F.2d 872 (2d Cir. 1971), cert. denied, 404 U.S. 1018, 92 S. Ct. 680, 30 L.Ed.2d 666 (1972).

[9] It must also be understood that the prior art, even if embodied in the file wrapper and presumably considered by the examiner in the Patent Office, involved only an ex parte presentation, whereas at the trial, defendant Dynamics offered the testimony of several experts which disclosed that the alleged invention was "obvious" to a skilled electrical engineer such as Kahn. Richmond Screw Anchor Co. v. Superior Concrete Accessories, 256 F.2d 232 (2d Cir. 1958). Significantly, neither of plaintiff's expert witnesses contradicted defendant's witnesses although they had considered the prior art in preparing to testify. Indeed, one of plaintiff's experts, Hekimian, admitted he was not familiar with the Oswald patent and "would not care to comment on it."

[10] It is clear that Kahn made no new contribution to the art, but at most republicized what had much earlier been developed and published by others, at least some of which he had encountered in his work for Crosby Laboratories.[11] The subject matter of his patent is fully anticipated by, and certainly obvious, in view of the work of Peterson, Beverage and Moore at RCA as well as the work of Polkinghorn, Oswald, Friis and Feldman at BTL. Kahn's argument that all the prior art material relied upon by defendant, in addition to the Oswald patent, was "indirectly before the Patent Office" is specious. Moreover, the prior art referred to and relied upon by defendant does teach the principle of combining signals in a diversity receiving system in accordance with the ratio square law. They are all valid references against Kahn under 35 U.S.C. § 102 (1970), and in any event under 35 U.S.C. § 103 (1970), even though they employ circuitry different from that employed by Kahn to achieve ratio-squared combining. Furthermore, whether or not they attained ultimate perfection, the circuits, in operation, provided signal-to-noise benefit similar to that asserted by Kahn.

Moreover, the Oswald patent not only contains a full disclosure of the principle of ratio-squared combining in a diversity system, but indeed its mode of operation and the circuitry employed therein are essentially similar to those disclosed by the Kahn patent. The "hypothetical" circuit prepared by defendant's expert Bingley (Def.'s Exh. AA) was, in effect, Oswald's circuit incorporating the change which Oswald had himself proposed as disclosed in the Ohl patent (Patent No. 2,041,855 to R. S. Ohl issued May 26, 1936).[12] There is no evi-

11. See note 4 *supra*.

12. See note 9 *supra*.

dence that the Ohl patent was considered by the examiner or that Kahn called it to his attention. Thus, we have a circuit (Kahn's) anticipated by Oswald with one possible distinction which, however, was also anticipated by another patentee (Ohl). All of the elements of the Kahn circuit were, therefore, anticipated by the prior art. Sensytrol Corp. v. Radio Corporation of America, 190 F.Supp. 121, 125 (S.D.N.Y.), aff'd, 289 F.2d 938 (2d Cir. 1961). The patent in suit is accordingly invalid as anticipated by the prior art under the provisions of 35 U.S.C. § 102 (1970). Moreover, even if not fully anticipated by the prior art, any "differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person" such as Kahn, and, therefore, the patent is accordingly invalid under 35 U.S.C. § 103 (1970).

However, even if the Kahn patent were not invalid under the provisions of 35 U.S.C. §§ 102 and 103, the Court would still be constrained to find for defendant. The only claims of that patent as to which plaintiff attempted to prove infringement are claims 15 and 16. These claims are invalid because no claims of a substantially similar scope were presented to the Patent Office—either in the original patent application filed July 3, 1953 and abandoned December 30, 1960, or in the continuation application as filed December 13, 1960—until more than one year after equipment substantially the same as that charged to infringe had been on sale and delivered to customers. Muncie Gear Works, Inc. v. Outboard Marine & Mfg. Co., 315 U.S. 759, 62 S.Ct. 865, 86 L.Ed. 1171 (1942); Chicopee Mfg. Corp. v. Kendall Co., 288 F.2d 719 (4th Cir.), cert. denied, 368 U.S. 826, 82 S.Ct. 44, 7 L.Ed.2d 29 (1961).

The claims which issued as patent claims 15 and 16 were first introduced by Kahn as application claims 24 and 25 by amendments of the continuation application filed in August and November 1961. Kahn argues that there was no change to the drawings or specifications in the patent except for the addition in a drawing of an insignificant resistor requested by the patent examiner, and, more importantly, that the claims sought on filing were much broader than those obtained on issue. However, it is immaterial to the defense of late claiming whether or not the claims in suit were supported by the application as originally filed. The dispositive question is whether or not they are directed to essentially the same subject matter as claims originally presented. If they are not, but rather are directed to more specific subject matter which has been in public use or on sale more than one year prior to the presentation of these or substantially similar claims in the patent application, then it is immaterial that broad, unpatentable claims were presented in the application as originally filed. The applicability of the late-claiming defense is not dependent on whether the claims in issue are based on new matter added to the disclosure subsequent to the filing of the application, and is not rendered inapplicable because broader claims were present in the application as originally filed. Rather, this defense relies on the fact that the claims are directed to subject matter not essentially the same as that originally claimed in the application, and which indeed may be more specific and limited than those originally presented.

No claims corresponding in scope to claims 15 and 16 of the Kahn patent were presented in the application as originally filed. Diversity receivers of the type charged by Kahn to infringe claims 15 and 16 of his patent had been on sale and delivered to users by defendant Dynamics more than one year before any claims of this scope were presented in either of Kahn's two patent applications. Accordingly, if claims 15 and 16 could be construed to read on defendant's receivers, they would be invalid under *Muncie, supra*, 315 U.S. 759, 62 S.Ct.

865, 86 L.Ed. 1171, and *Chicopee, supra*, 288 F.2d 719.

Mindful of the authoritative suggestion in Sinclair & Carroll Co., Inc. v. Interchemical Corp., 325 U.S. 327, 330, 65 S.Ct. 1143, 89 L.Ed. 1644 (1945), that the District Court in an infringement suit inquire fully into the validity of the patent claimed to be infringed,[13] this Court declined to dismiss the infringement claim at the conclusion of plaintiff's affirmative case and permitted the case to continue so that defendant could attempt to sustain its burden of showing the patent to be invalid and thus noninfringeable. Although, as has been found, the patent and, more specifically, the claims alleged to have been infringed are invalid, the court further finds that even if such invalidity did not exist, no sufficient proof of infringement has been adduced. Indeed, not only did plaintiff fail to sustain his burden of proving infringement, but defendant has proved by a clear preponderance of the evidence that its accused system does not infringe.

As previously explained, the Kahn patent is directed to diversity receiving systems in which versions of signals recovered through plural diversity receiving branches are combined in proportion to the squares of their signal strengths at the branch receiver input connections. The patent contemplates that this combining in such proportions occurs no matter how greatly different are the relative strengths of the signals supplied to the various branches. Defendant's systems do not operate in this manner. They are hybrid systems in which, whenever the signals in the branches differ in strength by less than two-to-one, such signals are combined in a ratio which is a varying exponential power (of the order of the sixth power) of the ratio of the input signal strengths. When the incoming signals of the branches differ in strength by more than a two-to-one ratio, only the signals from the branches having the stronger input contribute to the output, the weaker signal contributions being effectively switched off. In short, *defendant's systems are both combining and selective.*[14]

On his direct examination, plaintiff's expert ineffectually tried, with the benefit of two charts, to show how the clauses of claims 15 and 16 of the Kahn patent could be applied to defendant's receivers. In attempting to construe the claims, he paid no attention to the related prior art, which would be the logical starting point for both construing the claims and for determining Kahn's advance (if any) over the prior art which, in turn, would be used for the purpose of determining the scopes of the claims and considering the question of infringement. Additionally, he completely ignored the relation between the element clauses of the asserted claims and the Kahn specification, contrary to the last paragraph of 35 U.S.C. § 112 (1970).[15]

13. *But see* Harries v. Air King Products Co., 183 F.2d 158, 161-162 (2d Cir. 1950) as to appellate review of both infringement and invalidity.

14. After the initial interest in ratio squaring, combining limited to a narrow range came to be recognized as quite advantageous. After having advised government agencies to call for ratio-squared combining in their specifications for diversity receiving equipment, Mack and his colleagues at MIT's Lincoln Laboratory came to the realization that it is disadvantageous to use ratio squaring when the received signals in the branches differ greatly. *e. g.*, for signal ratios such as ⅓, ¼, ⅕, ⅛ or 1/10. Altman of IT&T, and Mellen of Lincoln Laboratory independently recognized that it would be desirable to use equal-gain combining (rather than ratio-squared combining) for so long as the weaker of the combined signals is not much weaker than ½ the strength of the stronger branch input signal, and to cut off the weaker channel completely when its signal becomes appreciably weaker than ½ the stronger-branch input signal strength.

15. Section 112 provides in pertinent part:

"An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof."

Both of claims 15 and 16 recite a plurality of means for performing specified functions. However, plaintiff's expert made no effort to consider these various means clauses in the light of the disclosure of the patent to determine what their proper range of equivalents should be for the purpose of determining infringement.

Plaintiff attempts to invoke the doctrine of equivalents, asserting that even if defendant's accused diversity receiving systems do not literally infringe the claims of the Kahn patent, nevertheless infringement may be found on the basis that those systems perform substantially the same function in substantially the same way and for substantially the same purpose as purportedly defined in the Kahn claims. In support of the application of the doctrine, plaintiff suggests that the accused systems differ from what is defined in his patent claims only in what he contends are minor respects amounting to obvious engineering differences which are not material—namely, (a) that they effect signal control in response to out-of-band noise rather than in response to signal level *per se*, and (b) that they use parallel rather than series combining. However, it is clear that there are even more significant differences between defendant's systems and the subject matter of the Kahn claims. One important distinction is that defendant's systems do not use ratio squaring, the "essence" or "principle" which Kahn has attempted unsuccessfully to appropriate as his own.[16] In order to make out a case for infringement, Kahn would have had to show not only that defendant's receivers do use square-law (*i. e.*, ratio-squared) operation, but also that they use the same kind of means as claimed by him to provide it—a burden which he could not sustain.

In short, plaintiff failed to make out a case of infringement. His expert witness was unable to arrive at any definitively understood relation between the claims in suit and the disclosure in Kahn's specification and drawings. Although the expert acknowledged that since claims 15 and 16 consist exclusively of means claims they are required to be interpreted by reference to the specification,[17] he failed to resolve the relation between the claims' clauses and the specification. In prosecuting his infringement suit, Kahn wishes his patent to be treated as though he had invented ratio-squared combining and, thus, that he should be entitled to a patent monopoly over any conceivable form of receiving system using in any way this approach for enhanced signal-to-noise ratio in diversity reception. However, in attempting to support the validity of his patent he argues for strict construction of his patent and rules out any prior art where the ratio of the inputs are not precisely squared. By his approach to the infringement issue he would have to assert that Peterson et al., Oswald, and Polkinghorn were infringers except for the fact that they long preceded him with their ratio squared combining diversity systems. But "[t]hat which infringes, if later, would anticipate, if earlier." Peters v. Active Mfg. Co., 129 U.S. 530, 537, 9 S.Ct. 389, 392, 32 L.Ed. 738 (1889). "It is hornbook patent law that if a reference would have infringed, if later, it anticipates, if earlier." Ritter v. Rohm & Haas Co., 271 F.Supp. 313, 335 (S.D.N.Y.1967). Therefore, assuming *arguendo*

16. Kahn attempts to refute defendant's contention that its receivers do not use ratio squaring by citing to a pre-trial stipulation, with respect to defendant's accused diversity receiving systems, to the effect that "the way in which the outputs of the different branch receivers are utilized in diversity reception" is as described in the instruction manuals in evidence relating to those systems. He points to selected portions of these manuals, taken out of context, as supporting the conclusion that the accused systems have related essence to what he claims; *e. g.*, he argues that "post-detection optimum ratio band combining" really means ratio squaring, although the evidence does not support such contention.

17. See note 15 *supra*.

the validity of the patent and the particular claims thereof allegedly infringed, it is clear that plaintiff has completely failed to sustain his burden of proving infringement. In view of the foregoing, it is unnecessary to consider the defense of laches raised herein.

Finally, we reach defendant's claim that it is entitled to an award of reasonable attorney's fees under 35 U.S.C. § 285 (1970). As this court has had occasion to state, "only where the court is convinced that the patent is so wholly devoid of substance that the plaintiff could not have had a bona fide belief in its validity shall it award the defendant reasonable attorneys' fees pursuant to 35 U.S.C. § 285." Indiana General Corp. v. Krystinel Corp., 297 F.Supp. 427, 449 (S.D.N.Y.1969), aff'd, 421 F.2d 1023 (2d Cir. 1970), cert. denied, 398 U.S. 928, 90 S.Ct. 1820, 26 L.Ed.2d 91 (1970). As has been shown, plaintiff deceived the Patent Office both as to the highly pertinent Peterson, Beverage and Moore paper with which he had become familiar while working for Crosby Laboratories,[18] and with respect to the true nature and capabilities of the system disclosed in the Oswald patent. He argues, but without conviction, that the Patent Office must have known of the "historic" Peterson et al. paper and that that office could read the Oswald patent as well as he could. But the record does not support his argument that the Patent Office did know of the relevancy of the Peterson et al. paper, and, as has been shown, the Patent Office was misled by plaintiff as to the Oswald patent.

> "A patent applicant's breach of duty to the Patent Office is relevant in determining not only the validity of his patent, but also his good faith in maintaining a subsequent infringement action. An applicant's fraud on the Patent Office is enough standing alone to convert his later infringement action into an exceptional case within the meaning of section 285. But conduct short of fraud and in excess of simple negligence is also an adequate foundation for deciding that a patent action is exceptional." Monolith Portland Midwest Co. v. Kaiser Aluminum and Chemical Corp., 407 F.2d 288, 294 (9th Cir. 1969).

See also Shelco, Inc. v. Dow Chemical Co., 466 F.2d 613, 618 (7th Cir.), cert. denied, 409 U.S. 876, 93 S.Ct. 125, 34 L.Ed.2d 129 (1972); Contour Saws, Inc. v. L. S. Starrett Co., 444 F.2d 1331, 1335 (1st Cir. 1971).

Moreover, while the Court has not found it necessary to pass upon the defense of laches, the facts which have been adduced in support of that defense are relevant to the issue of plaintiff's good faith in bringing this law suit. Less than six months after his patent had issued and in September 1962, Kahn charged that defendant's laboratories (REL) could "raise an infringement question with respect to" the patent now in suit. Thereafter, REL's attorneys made a study of the Kahn patent and, on November 4, 1963, wrote plaintiff's attorneys advising that, for the reasons set forth in that letter, it was clear that there was no possible infringement. Ten days after defendant, on June 16, 1969, had written Kahn's attorneys explaining in greater detail why there was no infringement Kahn instituted the present suit. In the three-year period from that date to the commencement of the trial on June 12, 1972 plaintiff apparently made no efforts, through discovery or otherwise, to ascertain the difference between defendant's systems and the claims of his patent.[19]

18. See note 4 *supra*.

19. Defendant duly proceeded with written interrogatories under Rule 33 of the Federal Rules of Civil Procedure ("FRCP"), motions for production under Rule 34 FRCP, a deposition of plaintiff, and depositions of two elderly witnesses, Peterson and Polkinghorn. From June 1969 to May 1972 (a month before trial) plaintiff took none of the available discovery steps. On May 10, 1972 (more than one year after the date set by the court for completion of all discovery) plaintiff presented defendant with a broad

In the light of the complete inadequacy of plaintiff's case on infringement, the Court can only conclude that plaintiff's purpose in bringing suit was to compel defendant to obtain a non-exclusive license under the patent rather than face the expenses of trial.[20] Plaintiff personally, during the discovery portion of the case, completely failed to make a substantially meaningful showing of grounds for his infringement allegation. Neither in his deposition on oral examination nor in his response to the written interrogatories did plaintiff ever provide definitive identification of a combination of elements in the accused receivers to which he could demonstrate the applicability of the respective clauses of a claim or claims of his patent, element by element. The infringement question in this case is not close enough as to be a matter upon which informed, reasonable counsel or scientifically informed, reasonable men might differ, and plaintiff failed to use reasonable care in assessing his infringement allegation prior to bringing suit. On the other hand, defendant, prior to institution of the suit, informed plaintiff of the differences between its product and the claims allegedly infringed in a futile attempt to avoid costly litigation. In the instant case, therefore, the obvious absence of infringement may be equated with bad faith on plaintiff's part. Kaehni v. Diffraction Co., 342 F.Supp. 523 (D.Md.1972), aff'd without opinion, 473 F.2d 908 (4th Cir. 1973), pet. for cert. filed, 42 U.S.L.W. 3001 (U.S. June 25, 1973) (No. 73–2).

CONCLUSIONS OF LAW

1. The Kahn Patent No. 3,030,503 is invalid under 35 U.S.C. §§ 102 and 103 (1) since it is anticipated by the Oswald Patent No. 2,219,749 showing substantially the same combinations of elements as described in the Kahn patent, and (2) since it is obvious to those skilled in the area in view of the prior art including the Peterson, Beverage and Moore paper;[21] the Terman text "Radio Engineering";[22] the Polkinghorn paper;[23] the Polkinghorn Patent No. 2,219,751; The Friis and Feldman paper;[24] the Oswald Patent No. 2,219,749; and the Ohl Patent No. 2,041,855.

2. The Kahn patent is invalid because of plaintiff's failure to disclose material facts of which it was aware, and its arguments wherein the contents of the Oswald patent and the Brennan paper[25] were materially misrepresented.

3. Claims 15 and 16 of the Kahn patent could not be valid claims of the scope asserted by plaintiff because the subject matter of such claims was first asserted in and after August 1961, more than one year after equipment identical to that charge to infringe had been on sale and had been delivered to customers.

4. The Kahn patent is not infringed by defendant, for the reason, *inter alia*, that an invalid claim cannot be infringed.

5. Plaintiff, in any event, has failed to present evidence competent to sustain its burden of proving infringement.

6. The Kahn patent is not infringed, since the claims of that patent are limited to ratio-squared combining or to such variation of diversity branch receiver amplification as only to square the input signal ratios, where defendant's diversity systems raise their signals to greater

informal request for production of documents and defendant produced several manuals relating to its receiver systems pursuant to this request. These are the manuals upon which plaintiff bases his contention that defendant's receivers employ ratio squaring. (See note 16 *supra*.)

20. While under the circumstances of this case, the fact that certain companies had accepted licenses under the Kahn patent and made certain payments for a short period to Kahn cannot be given weight as tending to support the validity of the patent, that fact is relevant as to Kahn's motive in pursuing the unwarranted infringement claims.

21. See note 4 *supra*.

22. Id.

23. See note 6 *supra*.

24. See note 5 *supra*.

25. See note 8 *supra*.

exponential powers than 2 (the square), and switch off the weaker signal except when the signal strengths are within a ratio of about 2:1.

7. The complaint is dismissed with costs to defendant. Furthermore, this case is exceptional within the purview of 35 U.S.C. § 285 and defendant is entitled to an award of attorneys' fees, to be determined on the basis of evidence to be presented in support thereof.

Submit judgment in conformity herewith on five (5) days' notice within ten (10) days of the filing of this opinion.

U. S. Constitution Article 1, Section 8, Para. 8.

To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.

U. S. Constitution, Fifth Amendment.

No person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a grand jury, except in cases arising in the land or naval forces, or in the militia, when in actual service in time of war or public danger; nor shall any person be subject for the same offense to be twice put in jeopardy of life or limb; nor shall be compelled in any criminal case to be a witness against himself, nor be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use without just compensation.

§ 102. Conditions for patentability; novelty and loss of right to patent

A person shall be entitled to a patent unless—

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or

(c) he has abandoned the invention, or

(d) the invention was first patented or caused to be patented by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application filed more than twelve months before the filing of the application in the United States, or

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or

(f) he did not himself invent the subject matter sought to be patented, or

(g) before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it. In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

LAST TWO QUESTIONS OF GRUBER'S DIRECT TESTIMONY (JA 986-987), AND

PERTINENT PARAGRAPH OF FORMAL PRE-TRIAL STIPULATION (Exh. P2, para. 7)

Gruber Direct Testimony:

Q. Would you refer to the next paragraph on this same page No. 4-33 of Exhibit 24?

It says, "With the applied noise ratios between the two extremes previously discussed, different bias voltages are needed to satisfy the approximate square law characteristics of the combiner for best signal to noise combiner output. Because all combiner tube cathodes are connected in parallel, the cutoff bias of each combiner tube is not a function of the negative voltage applied to its grid but of the dc voltage difference existing between the grids of various combiner tubes."

And the question that I want to ask you here is, did you, in your receivers, actually satisfy the approximate square law characteristics of the combiner which were referred to as characteristics for best signal noise combiner output?

A. No.

Q. Is the power that you made use of, so far as you can speak of it as a power or an exponent, as to the relation between the input signal ratio and the ratio where you do the combining a considerably higher exponent or power than square law or even cube law, or even fourth power law?

A. Yes, it is higher.

MR. FERRILL: You may examine.

Stipulation Excerpt:

The way in which the outputs of the different branch receivers are utilized in diversity reception with the series 2500 equipment is as described in the Instruction And Parts List Manual. (Exh. P-2, para. 7)

Dated June 12, 1972